



## Goddard Procedural Requirements (GPR)

**DIRECTIVE NO.** GPR 8621.4  
**EFFECTIVE DATE:** January 9, 2012  
**EXPIRATION DATE:** January 9, 2017

**APPROVED BY Signature:** Original Signed By  
**NAME:** Arthur F. Obenschain  
**TITLE:** Deputy Director

---

### **COMPLIANCE IS MANDATORY**

---

**Responsible Office:** 350/ Occupational Safety & Health (OS&H) Division

**Title:** GSFC Mishap Preparedness and Contingency Plan

---

### **TABLE OF CONTENTS:**

#### **PREFACE**

#### **P.1 PURPOSE**

#### **P.2 APPLICABILITY**

#### **P.3 AUTHORITY**

#### **P.4 APPLICABLE DOCUMENTS**

#### **P.5 CANCELLATION**

#### **P.6 SAFETY**

#### **P.7 TRAINING**

#### **P.8 RECORDS**

#### **P.9 MEASUREMENT/VERIFICATION**

#### **PROCEDURES**

- 1. Roles and Responsibilities**
- 2. Pre-Mishap Planning**
- 3. Mishap Management**
- 4. Mishap Investigation**

#### **FIGURES**

- 1. Reporting of Mishaps and Close Calls**
- 2. Notification Process at GSFC**
- 3. Investigation Process for Mishap and Close Call Investigation**

#### **APPENDICES**

- A. Definitions**
- B. Acronyms**
- C. Mishap Classification Levels**
- D. Establishing Level of Appointing Authority Official**
- E. Organization and Management Notification**
- F. Example Investigating Authority Assignment Memorandum**
- G. Mishap Investigation Notional Timeline**
- H. HQ Notification Form**

CHECK THE GSFC DIRECTIVES MANAGEMENT SYSTEM AT  
<http://gdms.gsfc.nasa.gov> TO VERIFY THAT THIS IS THE CORRECT VERSION PRIOR TO USE.

<b>DIRECTIVE NO.</b>	<u>GPR 8621.4</u>
<b>EFFECTIVE DATE:</b>	<u>January 9, 2012</u>
<b>EXPIRATION DATE:</b>	<u>January 9, 2017</u>

**I. Reporting of Mishaps and Close Calls**  
**J. Notification Process at WFF**  
**K. Mishap and Close Call Investigation Process**

**PREFACE**

**P.1 PURPOSE**

This directive establishes procedures and requirements for reporting, processing, and investigating mishaps and close calls at the Goddard Space Flight Center (GSFC). This includes the establishment of investigation authorities and the development, implementation, and evaluation of corrective actions and lessons learned. The purpose of mishap and close call investigations is to identify root cause(s) in order to prevent recurrence and reduce the number and severity of future mishaps and close calls. This directive is the GSFC implementation of NPR 8621.1

**P.2 APPLICABILITY**

This directive is applicable to all NASA organizations conducting work onsite or at offsite facilities owned or controlled by GSFC. It is applicable to NASA GSFC contractors as specified in their contracts or grants, and other organizations as specified in written operating agreements. Mishaps or close call investigations involving remote deployments at or by Wallops are managed by the Wallops Safety Office. Specific exceptions by facility location will be identified in this document. This document does not address processing, reporting, or investigation of anomalies or non-conformances. This directive does not apply to investigations concerning civil, criminal, or administrative culpability or legal liability. The safety investigative process shall not be used to direct or justify disciplinary action.

**P.3 AUTHORITIES**

NPR 8621.1, NASA Procedural Requirements for Mishap and Close Call Reporting, Investigating, and Recordkeeping

**P.4 APPLICABLE DOCUMENTS**

- a. NPR 3792.1, NASA Plan for a Drug-Free Workplace
- b. NPR 7120.5, NASA Space Flight Program and Project Management Requirements
- c. GPR 8710.2, GSFC Emergency Management Program Plan
- d. NTSB 6120, Pilot/Operator Aircraft Accident Report
- e. NASA Shared Services Center Service Delivery Guide, NSSC-HR-SDG-0002
- f. NFS 1852.223-70 NASA FAR Supplement
- g. 350-GUID-1001, ASA/GSFC Program/Project Mishap Preparedness and Contingency Plan Guidelines
- h. 803-PLAN-0003, Emergency Operations Plan for Wallops Flight Facility

## P.5 CANCELLATION

- a. GPR 8621.1B, Reporting of Mishaps and Close Calls
- b. GPR 8621.2B, Processing Mishap and Close Call Reports
- c. GPR 8621.3B, Mishap and Close Call Investigation

## P.6 SAFETY

N/A

## P.7 TRAINING

See Section 2.4 for specific training requirements.

## P.8 RECORDS

Record Title	Record Custodian	Retention
Incident Reporting Information System (IRIS) Report	Occupational Safety & Health Division, Code 350	*NRRS 1/121B – Retire to Federal Records Center when 4 years old. Destroy when 20 years old.
Case file of all records from an investigation, including Closeout Letter and Report	Code 350 for Greenbelt, or Code 803 for Wallops	*NRRS 1/122 Permanent – retire to Federal Records Center when 2 years old. Transfer to National Archives and Records Administration when 20 years old.
SATERN/Records of Root Cause & other mishap related training	Office of Human Capital Management	*NRRS 3/33 G1 – Destroy 5 years after employee discontinued or completes training.

\*NRRS – NASA Records Retention Schedules ([NPR 1441.1](#))

## P.9 MEASUREMENT/VERIFICATION

The appropriate Safety Office will gather metrics from the following activities and analyze them for trends and lessons learned:

- a. Analysis (trends, numbers, etc) of mishaps and close calls (measured by the appropriate safety office);
- b. Elapsed time between mishap/close call, the Mishap Investigation Board (MIB), Mishap Investigation Team (MIT), and Mishap Investigator (MI) appointment, and the submission of the report; and
- c. Elapsed time between the corrective action plan development and the completion of corrective actions.

<b>DIRECTIVE NO.</b>	<u>GPR 8621.4</u>
<b>EFFECTIVE DATE:</b>	<u>January 9, 2012</u>
<b>EXPIRATION DATE:</b>	<u>January 9, 2017</u>

Additional metrics will be identified and utilized as appropriate. These metrics will be reported to management and safety committees on a periodic basis or as requested.

## **PROCEDURES**

In this document, a requirement is identified by “shall,” a good practice by “should,” permission by “may” or “can,” expectation by “will,” and descriptive material by “is.”

## **INTRODUCTION**

This document describes the mishap management program for GSFC. It establishes the initial response processes and procedures for the immediate gathering of essential facts and information surrounding mishaps, and close calls. Detailed and factual analysis of this information is used in determining causal factors, corrective actions, lessons learned, and preventing recurrence of situations and factors that could lead to similar and/or further mishaps.

All mishaps/close calls that occur at a GSFC facility shall be reported and investigated using the procedures defined in NPR 8621.1 and in this GPR. Investigations shall be conducted to determine the actual or probable cause(s), to determine appropriate actions for avoiding recurrence, and to document the investigations so that others can learn from the findings and a recurrence can be prevented. Lessons learned should be generated after the investigation is completed to share information to prevent the recurrence of similar incidents.

The investigation shall commence as soon as all emergencies are under control. The incident commander, appropriate safety office, or supervisor is responsible for ensuring that the mishap site is safe, secured, and ensuring that any associated evidence is secured. Chapter 5 of NPR 8621.1 provides a detailed overview of the mishap investigation process. Additional GSFC specific requirements are detailed in this GPR.

Flow charts illustrating the Reporting of Mishaps and Close Calls (Appendix I), Notification Process at GSFC (Appendix K), and Investigation Process for Mishap and Close Call Investigation (Appendix J) are included in this document as appendices.

### **1. Roles and Responsibilities**

#### **1.1 The GSFC Director will:**

- a. Ensure that the reporting requirements and associated timelines are in accordance with NPR 8621.1;
- b. Delegate the initial classification of the mishap to the responsible organization and the appropriate safety office;

- c. Serve as the appointing official for Type A mishaps and Type B mishaps, high-visibility mishaps, and high-visibility close calls occurring at or managed by GSFC or involving GSFC support contractors;
- d. Delegate the role of Appointing Official for investigation of Type C mishaps, Type D mishaps, and close calls as identified in Appendix D;
- e. Obtain concurrence from NASA Headquarters Chief, Safety & Mission Assurance, and Chief Engineer on the Mishap Investigation Board (MIB) membership for Type A mishaps, Type B mishaps, high-visibility mishaps, and close calls;
- f. Provide funding for GSFC investigations;
- g. Provide administrative and logistical support for the investigating authorities; Serve as the Approving Official for mishap investigations where he/she was the appointing official; and
- h. Approve/disapprove employees drug testing in the event of a mishap meeting the testing criteria described in section 3.4; per NPR 3792.1 this authority may be delegated.

## **1.2 Directors of shall:**

- a. Ensure that their directorate maintains a pool of employees with appropriate mishap investigation training;
- b. Support Interim Response Team (IRT) or investigating authority needs by providing subject matter experts, equipment, contractor support, and other needed resources; and
- c. Appoint investigating authority for Type C mishaps (Appendix D).

## **1.3 Appointing Official shall:**

- a. Determine the type of investigating authority MIB, MIT, or MI that will investigate a mishap or close call or whether NASA will accept the investigation and subsequent mishap report of another competent authority that may have jurisdiction;
- b. Determine the level of NASA involvement when a mishap resulted from the actions of an outside source that was not involved in NASA operations;
- c. Appoint the mishap investigating authority in accordance with NPR 8621.1;
- d. Ensure that the investigation is conducted in accordance with NPR 8621.1; and
- e. Serve as an endorsing official for mishaps and close call for investigation reports for which he/she is the appointing official.

## **1.4 Office of Human Capital Management, Code 110, shall:**

- a. Coordinate appropriate notifications to families of civil servants in the case of a fatality or serious injury; and
- b. Notify the NASA Shared Services Center (NSSC) when drug testing services are required for mishaps and close calls.

**1.5 Office of Communications, Code 130, shall:**

- a. Prepare emergency information for the media, when necessary;
- b. Handle inquiries from the media and the public;
- c. Coordinate and disseminate information to GSFC employees, as appropriate; and
- d. Ensure contractor personnel do not release statements to the media without clearance from GSFC.

**1.6 Facilities Management Division, Code 220, shall:**

- a. Provide a skilled damage-assessment team who shall assist in determining extent of damaged area if the mishap is facilities-related;
- b. Evaluate the effect of damage on GSFC facilities and facilitate long-range recovery planning;
- c. Assist the incident commander with emergency building evacuations;
- d. Determine recovery times of any affected utility systems; and
- e. Assist in returning the facility to operational status, including but not limited to removing debris, restoring electrical and water service, and condemning unsafe structures.

**1.7 Protective Services Division, Code 240, shall:**

- a. Ensure that the mishap site is safe and secure;
- b. Preserve the scene to the greatest extent possible so that mishap investigation activities can commence;
- c. Support the appropriate Safety Office with impounding data, records, equipment and facilities;
- d. Maintain documented procedures to meet incident management requirements;
- e. Coordinate GSFC resources utilized in emergency response, recovery and hazard mitigation;
- f. Perform initial assessment of emergency situations and damage;
- g. Relinquish site transfer command to the IRT after all incident management, including rescue and law enforcement activity efforts are completed and it has been determined that there is no evidence of any criminal activity. Note: if recovery/mitigation activities are required following response to a major emergency, it seems a unified command may be established by the Incident Commander to allow recovery/mitigation to occur simultaneously with IRT activities. If no recovery/mitigation required, IRT could take over;
- h. Provide all evidence gathered at the scene to the IRT or investigating authority; and
- i. Conduct appropriate emergency drills annually to ensure systems, equipment, and response protocols are in place.

At Greenbelt, the Protective Services Division shall manage emergency response, recovery and mitigation in accordance with GPR 8710.2, Emergency Management Program Plan. At WFF, the Wallops Fire Department shall manage emergency response and mitigation in accordance with 803-PLN-0003, Emergency Management Plan.

**1.8 Information and Logistics Management Division, Code 270, shall:**

Provide urgent logistical (including, but not limited to photographic, administrative, stenographer, and/or graphics) support for the IRT and the investigating authority.

**1.9 The Systems Safety Branch, Code 321, shall:**

- a. Ensure that Center managed flight related mishaps and close calls are reported in the Incident Reporting Information System (IRIS); and
- b. Ensure that Center managed flight project related mishaps and close calls are investigated per this document and NPR 8621.

**1.10 The Occupational Safety & Health Division, Code 350, shall:**

- a. Provide for oversight and development of the GSFC mishap management program;
- b. Serve as the GSFC administrator and expert for the IRIS;
- c. Ensure that IRIS access requests are approved/disapproved appropriately;
- d. Ensure that all mishap-related training is available as needed to maintain a pool of employees for participating on a mishap-investigation authority;
- e. Coordinate the establishment of GSFC Interim Response Teams (IRT) for GSFC mishaps and close calls at Greenbelt that are not covered by a Program/Project Mishap Preparedness Contingency Plan (MPCP);
- f. Assist the GSFC Director with determining the type of investigating authority that shall investigate a mishap or close call and determine whether NASA shall accept the investigation and report of another competent authority having jurisdiction;
- g. Generate the board appointment memorandum for signature by the appointing official for Type A mishaps, Type B mishaps, and high-visibility mishaps and high visibility close call investigations;
- h. Notify GSFC management of a mishap or close call (Appendix E);
- i. Contact the appropriate appointing official (Appendix D) who shall initiate the investigative process if the event is other than a Type A or B mishap, high-visibility mishap or high visibility close call investigations;
- j. Support IRT or investigating authority needs by providing subject matter experts, equipment, contract support and other needed resources;
- k. Verify that NASA contractors and grantees conduct mishap investigations and provide mishap reports as specified in their contracts and in NFS 1852.223-70;
- l. Ensure that for administrative, logistical, and information technology support is available to the IRT and the investigating authority, as necessary. Administrative support may include but is not limited to, meeting rooms, clerical help, photographic support, records management assistance, contractual authority, laboratory analysis and Work Breakdown Structure (WBS) access. Logistical support may include but is not limited to travel support; and
- m. Review preliminary mishap investigating authority reports for compliance with NPR 8621.1 requirements.



**1.11 Information Technology and Communications Directorate, Code 700, shall:**

- a. Provide IT resources to the investigating authority.

**1.12 The Wallops Safety Office, Code 803, shall:**

- a. Ensure that IRIS access requests are approved/disapproved appropriately;
- b. Notify GSFC management of a mishap or close call (Appendix J);
- c. Contact the appropriate appointing official (Appendix D) who shall initiate the investigative process if the event is other than a Type A or B mishap, high-visibility mishap or high visibility close call investigations;
- d. Provide guidance to WFF mishap investigation authorities;
- e. Coordinate board appointments, activities and logistics requirements with Code 350;
- f. Coordinate the establishment of IRT's for mishaps and close calls at WFF;
- g. Support IRT or investigating authority needs by providing subject matter experts, equipment, contract support and other needed resources;
- h. Verify that NASA contractors and grantees conduct mishap investigations and provide mishap reports as specified in their contracts and in NFS 1852.223-70;
- i. Ensure that for administrative, logistical, and information technology support is available to the IRT and the investigating authority, as necessary. Administrative support may include but is not limited to, meeting rooms, clerical help, photographic support, records management assistance, contractual authority, laboratory analysis and Work Breakdown Structure (WBS) access. Logistical support may include but is not limited to travel support;
- j. Provide initial capability and support for the IRT to function until an investigating authority is established; and
- k. Notify the National Transportation Safety Board (NTSB) of mishaps and close calls involving aircraft. This notification shall be made by the GSFC Chief of Aircraft Operations. In addition, NTSB Form 6120 should be completed in accordance with NPR 8621.1 and NTSB requirements.

**1.13 Each Interim Response Team (IRT) shall:**

- a. Maintain communication status with the incident commander to ensure the flow of critical information, the securing of the mishap site, and the avoidance of further damage or injuries;
- b. Provide liaison and coordination with other entities;
- c. Identify witnesses and collect witness statements;
- d. Support the Office of Communications, the appropriate safety office, and the GSFC Director in the release of information regarding known hazards and their potential effects and provide instructions to mitigate risk and harm;
- e. Perform investigation-related activities until the investigating authority is appointed; and
- f. Relinquish control of the site command to the investigating authority or chairperson of the appropriate safety office upon request.



**1.14 Programs and Projects shall:**

- a. Assist the appropriate safety office with determining the classification of an incident;
- b. Develop and implement Program/Project MPCPs that are compliant with the GSFC's Mishap Preparedness Contingency Plan for all facilities in which the program operates and describes the procedures to comply with NPR 8621.1 notification, reporting, and investigating for all program/project activities not located at GSFC or managed by GSFC. A guideline can be found at the following url: [350-GUID-1001](#);
- c. Activate the MPCP, when appropriate, in the event of a mishap or close call involving their program or project;
- d. Halt operations/testing, as soon as possible after a mishap/close call, at a point where no additional hazard will be created. After notification of their supervisor or individual within their management chain, the appropriate safety office shall be notified as soon as possible. If directly affecting project hardware, notification to project safety/management should be provided. Operations cannot resume until notified by the appropriate safety office, IRT, or investigating authority;
- e. Provide funding and support for investigations within their program jurisdiction or involving their hardware and facilities; and
- f. Provide technical support (as necessary) to mishap or close call investigations.

**1.15 Contracting Officers shall:**

- a. Coordinate with Contracting Officer's Technical Representative (COTR) to initiate drug testing protocols, if contractually required. See Section 3.4;
- b. Ensure that the contract project manager is notified when their employees are involved in an incident;
- c. Ensure contractors report mishaps, close calls, emergencies, and unsafe or potentially unsafe conditions, in the workplace; and  
Ensure contractors investigate all mishaps/close calls in accordance with the respective contract.

**1.16 Supervisors shall:**

- a. Require employees to report mishaps, close calls, emergencies, and unsafe or potentially unsafe conditions in the workplace;
- b. Notify the appropriate safety office of mishaps or close calls;
- c. Notify the appropriate Facility Operations Manager if the mishap or close call is facilities related;
- d. Ensure that mishaps and close calls are reported in IRIS; and
- e. Appoint the Investigating Authority for Type D mishaps and close calls. See Appendix D.

### **1.17 Employees shall:**

- a. Immediately report emergencies, unsafe or potentially unsafe conditions, mishaps and close calls to 911;
- b. Safe the scene and/or halt operations or testing if an unsafe condition arises (unless ceasing operations would create greater danger), and notify the supervisor. Operations shall not resume until notified by the appropriate safety office, IRT, or investigating authority;
- c. Take action to limit further property damage or personnel injury if it can be done safely;
- d. Remain on the scene in a safe location until all necessary information is provided to emergency responders and/or the investigating authority; and
- e. Cooperate with IRT and/or investigating authority.

## **2.0 Pre-Mishap Planning**

### **2.1 Mishap Preparedness and Contingency Plans**

#### **2.1.1** This directive shall serve as the GSFC MPCP to:

- a. Define the policy and procedures for mishap reporting, investigation, and closure; and
- b. Define the interrelationship between GSFC emergency preparedness plans and program/project MPCPs.

#### **2.1.2** MPCPs for programs/projects as identified in NPR 7120.5 and managed by GSFC, shall:

- a. Be utilized to provide additional program/project information, i.e., hazards, contact lists, agreements, etc. The plan should stand alone for offsite mishaps and shall include information regarding mishaps occurring at offsite contractor locations;
- b. Be approved by the program/project manager and the project chief safety and mission assurance officer or appropriate safety office with concurrence of the Program Executive;
- c. Be completed prior to the Program/Project Critical Design Review (CDR);
- d. Be evaluated and updated as necessary prior to Pre-Ship Review (PSR) and Safety and Mission Success Review (SMSR), when applicable; and
- e. Be posted on the OSMA secure website. The URL is:  
<https://nsckn.nasa.gov/DMS/FolderDocs.aspx?Filter=461&FolderID=25390>

#### **2.1.3** Programs/Projects not required to have an MPCP by NPR 7120.5 shall follow this document and NPR 8621.1.

#### **2.1.4** Mishap Preparedness and Contingency Plans (MPCP) including emergency response shall be practiced during contingency simulations that occur prior to major test, launch, or activity. For ongoing programs with repeated activities, the Program Mishap Preparedness and Contingency Plan, including emergency response shall be conducted at every 18 months. The Center Safety Office where the

<b>DIRECTIVE NO.</b>	<u>GPR 8621.4</u>
<b>EFFECTIVE DATE:</b>	<u>January 9, 2012</u>
<b>EXPIRATION DATE:</b>	<u>January 9, 2017</u>

program is managed shall provide oversight of the MPCP simulation. At the conclusion of the simulation the Center Safety Office and Program will update plans as necessary.

## **2.2 Interim Response Team (IRT) Appointment**

**2.2.1** The Occupational Safety and Health Division (Code 350) shall appoint the Center IRT for Greenbelt. The WFF Safety Office (Code 803) shall appoint the Center IRT at WFF. Programs/Projects follow the process defined in the Program MPCP for IRT appointment.

**2.2.3** All IRT members shall take the required IRT training (reference Section 2.4.1).

**2.2.4** GSFC shall maintain an IRT in accordance with this document and Program/Projects MPCP's. IRT members will function in various roles following a mishap until the investigation is turned over to an investigation authority. The IRT will be formed based on the nature of the mishap and may consist of any of the following roles:

- a. IRT Lead – Civil servant in charge of all IRT activities. Assumes control of mishap site from Incident Commander and remains in control of scene and evidence. Maintains control of evidence/data;
- b. Deputy IRT Lead – Civil servant in charge of IRT activity coordination in the absence of the IRT lead;
- c. Mishap Scene Security Coordinator – Individual designated to ensure that the mishap scene is secured after the mishap occurs. This will usually be a member of the Protective Services Division;
- d. Written Witness Statement Coordinator – Civil servant designated to coordinate the process of having identified persons fill out witness statements of the incident and/or events leading up to it;
- e. Handling and Impoundment Coordinator (HIC) – Civil servant designated to coordinate all activities pertaining to hardware, documentation and debris impounding. The individual designated to be in charge of secure storage for impounded material;
- f. Chain of Custody Custodian – Civil servant designated to coordinate the securing of sensitive and personal items of injured or ill victims of a mishap;
- g. Photographic Support – Individual designated to take official pictures of the scene and debris sites;
- h. Office of Communications Advisor – Individual from the Office of Communications that will release mishap related information to the public. Responsible for responding to media/press releases or inquiries; and
- i. Office of Chief Counsel Advisor – Individual from the Office of Chief Counsel that will advise the IRT on legal matters pertaining to the mishap.

## **2.3 Facility or Test Emergency Procedures**

Building managers or engineers shall assess the operations within their buildings/facilities and develop emergency procedures when unique actions are required. Examples: Test stand systems are secured

<b>DIRECTIVE NO.</b>	<u>GPR 8621.4</u>
<b>EFFECTIVE DATE:</b>	<u>January 9, 2012</u>
<b>EXPIRATION DATE:</b>	<u>January 9, 2017</u>

prior to admitting the fire department to the scene or when it is necessary for the Facilities Management Division (Code 220) to shut off all utilities following an incident that occurs after hours.

## **2.4 Training Requirements**

### **2.4.1 IRT Training**

All members of the IRT shall be trained based on their designated task(s) upon assignment to the IRT.

- a. All IRT members shall receive the following training:
  - (1) National Incident Management System Online Training (IS-100). This training can be accessed at the following URL: <http://training.fema.gov/EMIWeb/IS/IS100A.asp>,
  - (2) The following mishap SATERN Courses: Overview of Mishap Investigations (SMA-002-07), Mishap Investigation Roles and Responsibilities (SMA-002-08), Completing the Investigation and Mishap Report (SMA-002-09), and Root Cause Analysis (SMA-002-10);
  - (3) Blood-Borne Pathogens (SATERN);
  - (4) NASA IRT Course;
  - (5) NASA IRT Video “Interim Response Team, Investigating an Accident”; and
  - (6) Familiarization with this GPR.

### **2.4.2 Investigating Authority Training**

- a. All mishap investigating authorities shall have at least one member that has completed the following SATERN courses: Overview of Mishap Investigations (SMA-002-07), Mishap Investigation Roles and Responsibilities (SMA-002-08), Completing the Investigation and Mishap Report (SMA-002-09), and Root Cause Analysis (SMA-002-10); and
- b. For Type A mishaps, Type B mishaps, high visibility mishaps, and high visibility close calls at least one member of an investigating authority and the ex officio shall be trained in NASA Root Cause Analysis. Refresher training is required every three years.
  - (1) All investigating authority members shall have completed the, following SATERN courses: Overview of Mishap Investigations (SMA 002-07), Mishap Investigation Roles and Responsibilities (SMA-002-08), Completing the Investigation and Mishap Report (SMA-002-09), and Root Cause Analysis (SMA-002-10) within 1 year;
  - (2) All investigating authority members shall be familiar with GPR 8621.4 and NPR 8621.1; and
  - (3) Investigating Authorities shall receive mishap investigating authority orientation training upon assignment to the investigation which includes roles and responsibilities, and NASA GSFC mishap and related procedures.

## **3.0 Mishap Management**

### **3.1 Actions Required as a Result of an Incident**

The following actions should be carried out by employees in the event of an incident:

- a. The initial response by personnel in the area when an incident occurs is very critical. The first priority is to get help. If an employee is involved in or witnesses a mishap that needs ambulance or fire department response, call 911 from an on-site phone. From an off-site phone: at Greenbelt dial (301) 286-9111; at Wallops dial (757) 824-1333. In the case of a fire or explosion, also activate the building fire alarm;
- b. GPR 8710.2 shall be the authority document for onsite incidents at Greenbelt when the emergency systems have been activated (i.e., 911 is called);
- c. If imminent danger is not present, employees should perform emergency shutdown procedures, safe the area, and notify appropriate supervisor;
- d. Employees should remain on the scene in a safe location until all necessary information is provided to emergency responders and/or the investigating authority; and
- e. If an injury has occurred and emergency care is not necessary, the injured employee should report to the Health Unit (civil servants or contractors). Once an area has been secured, employees should not enter that area until it is released by the incident commander.

### 3.2 Securing the Mishap Site

- a. The site shall be secured, to the extent possible, to preserve the mishap evidence for the investigation. Evidence preservation shall not hamper essential rescue operations. When an event does not require the need for an incident commander, the official in charge of the area shall secure the site until the appropriate safety office or interim response team takes control of the scene;
- b. The incident commander, official in charge, or appropriate safety office shall determine if there are any hazards (e.g., hazardous materials and chemicals, radiation, blood-borne pathogens, etc.) present and ensure needed precautions are taken to safe the scene;
- c. The IRT or appropriate safety office with other support (e.g., supervisor, safety, and security) shall impound appropriate records, equipment, and/or facilities involved in the mishap and hold until released to the Investigating Authority. The data to be impounded includes, but is not limited to, the following: maintenance records, work orders, design drawings, training records, and procedures;
- d. The storage location of impounded items shall be dependent on incident conditions, i.e., large items can be secured in place, while location of pertinent records is coordinated with the organization directly responsible for the facility or operation; and
- e. The IRT or appropriate safety personnel shall obtain witness statements. Witness statements taken by civil service members of the IRT within the first 24 hours of the incident are considered privileged information and shall be properly protected and secured. Witness statements shall be documented.

### 3.3 Management Notification

- a. The supervisor shall immediately notify the appropriate Safety Office and their supervisor of the mishap or close call; and

- b. The appropriate safety office shall ensure that all other notifications are made per the Table in Appendix E. The Headquarters notification (Appendix H) shall include:
  - (1) the Center name;
  - (2) location of the incident;
  - (3) date and time of the incident;
  - (4) number of fatalities;
  - (5) number of hospitalized employees;
  - (6) type of injury;
  - (7) type of damage;
  - (8) contact person and phone number; and
  - (9) brief description of mishap.
- c. For situations involving medical emergencies, the appropriate safety office shall coordinate the appropriate notification protocols to the supervisor, organization head, Contracting Officer, or COTR . Only the GSFC Medical Director is authorized to contact medical facilities to obtain medical information on a patient;
- d. The appropriate safety office shall ensure the Occupational Safety and Health Administration (OSHA) area office is notified within 8 hours of any fatality or hospitalization of 3 or more employees as a result of a mishap; and
- e. Within 24 hours of the incident, the supervisor shall ensure that the incident is entered into the NASA Incident Reporting Information System (IRIS) at the following link:  
<https://nasa.ex3host.com/iris/quickincident/safety default.asp>. Internet Explorer is the recommended browser. Select Quick Incident Safety to report the details of the mishap or close call. A user name and password are not required to use IRIS for reporting a mishap or close call. IRIS will automatically notify the appropriate Safety Office when a mishap or close call is reported.

### 3.4 Drug Testing

Drug testing shall be conducted in accordance with NPR 8621.1 and NPR 3792.1 when a mishap results in a fatality or personal injury requiring immediate hospitalization or in damage estimated to be equal to or greater than \$10,000 to government or private property. It is recommended that testing be completed within 4 hours; however, attempts shall be abandoned if not done within 32 hours. If the mishap meets the drug testing criteria, the supervisor/manager shall contact the Office of Human Capital Management (OHCM) Drug Testing Coordinator at x 6-8318, Contracting Officer (if a contractor is identified), COTR, and other relevant management/organizations. If the OHCM Drug Testing Coordinator is not available, the civil service supervisor shall call NSSC at 1-877-677-2123. The NSSC-HR-SDG-0002, can be used as a reference.

### 3.5 Impound Process

The impound process shall be strictly controlled. Impoundment procedures may only be performed by civil service employees.

### 3.5.1 Data and Equipment Impoundment

Ground support equipment, test equipment and flight hardware involved in a mishap or high visibility close call shall be secured and subject to impoundment. Pertinent data shall also be subject to impoundment. All items shall be tagged and cataloged prior to impoundment. Examples of data subject to impoundment include but are not limited to the items shown below:

- a. check-out logs;
- b. test and check-out record charts;
- c. launch records;
- d. weather information;
- e. telemetry tapes;
- f. audio and video tapes;
- g. time cards;
- h. training records;
- i. inspection records;
- j. problem reports;
- k. notes;
- l. e-mail messages;
- m. automated log-keeping systems and procedures;
- n. computer data and databases;
- o. audio/video media that records the events;
- p. maintenance records/work orders;
- q. design drawings (e.g., facilities, equipment, spacecraft);
- r. spacecraft and launch readiness data packages;
- s. spacecraft team personnel records (training, time cards, certifications);
- t. configuration-controlled presentations, documents, drawings, Work Order Authorizations, etc;.
- u. photographic and video graphic records for the building, integration, and testing of the flight hardware (spacecraft and components);
- v. science instrument design drawings (e.g., equipment, facilities);
- w. science instrument team personnel records (training, time cards, certification);
- x. assembly, integration and operational procedures that were used;
- y. instrument and telemetry data; and
- z. Mission Operations Control Center data.

### 3.5.2 Information Technology Support

The IRT shall obtain support from an information technology (IT) professional to support the collection, maintenance, and security of IT data that has been impounded and collected. No one except a trained IT professional may remove data from servers and/or encrypted files. When the investigation is transitioned from the IRT to the Investigating Authority, the IT professional shall continue his/her support as needed.



### 3.5.3 Impound Storage

Storage shall be based on the mishap and location. The storage site of impounded equipment shall be dependent on the size and mobility of the equipment as well as the availability of an appropriate storage area (e.g., clean room, warehouse). The impounded data shall be stored in a locked container such as a file cabinet or storage cabinet. Access to the storage area shall be controlled by the IRT. The key to the storage area and container(s) shall remain in the possession of the handling and impoundment coordinator until another person is designated as custodian or the data is transferred to the investigating authority.

### 3.5.4 Chain of Custody Process

The chain of custody process shall be used for all impounded articles, including but not limited to, personal effects and sensitive information related to injured or deceased individuals. The IRT Chain of Custody Custodian shall be responsible for the tagging, securing and release of the impounded items.

## 4.0 Mishap Investigation

### 4.1 Appointing the Investigating Authority

**4.1.1** The Appointing Official should appoint the Investigating Authority (Appendix D), within 48 hours of the mishap or close call. The appointment letter will define duties and responsibilities and include the WBS charge number for the investigation. The mishap classification or level of investigation can be elevated by the Administrator, Assistant Administrator (AA), Mission Directorate Assistant Administrator (MDAA), GSFC Director, Chief/OSMA, or Chief Health and Medical Officer (CHMO) if the mishap is identified as High Visibility.

**4.1.2** For program/project mishaps occurring offsite, the MDAA or designee (as identified in the Program/Project MPCP) may act as the Appointing Official.

**4.1.3** The GSFC Director delegates appointment authority for Type C mishaps, Type D mishaps, and close calls to the responsible organization (Appendix D). The GSFC Director may require a higher-level investigating authority at their discretion.

**4.1.4** The Investigating Authority shall be responsible for investigating the mishap or close call and providing the report to the Appointing Official. The Investigating Authority shall consist of:

- a. Civil service employees as voting members;
- b. Civil service advisor support (e.g., public affairs, import/export control), as determined by the mishap circumstances;
- c. Contractor employees as nonvoting consultants, as determined necessary by the mishap circumstances;

- d. Civil service ex officio assigned to each GSFC mishap investigation (see Section 4.1.9.(c) for exception) to ensure the requirements of NPR 8621.1 and this GPR are followed;
- e. All members that have completed the SATERN courses: Overview of Mishap Investigations (SMA-002-07), Mishap Investigation Roles and Responsibilities (SMA-002-08), Completing the Investigation and Mishap Report (SMA-002-09), and Root Cause Analysis (SMA-002-10) within 1 year; and
- f. One member that has had additional mishap investigation and root cause analysis training within 3 years.

**4.1.5** For Type A mishaps, Type B mishaps, high visibility mishaps, and high visibility close calls, the investigating authority shall be a mishap investigation board (MIB), which is a NASA-sponsored board that:

- a. Requires concurrence from the NASA Headquarters Chief, Safety & Mission Assurance, and Chief Engineer on membership;
- b. Consists of an odd number of Federal employees, who are independent from the mishap operation;
- c. Requires a minimum of 5 voting members for Type A mishaps and 3 voting members for Type B mishaps; and
- d. Provides a Safety officer and Human Factors investigator, as voting members.

**4.1.6** For Type C mishaps, Type D mishaps, and close calls, the investigating authority may be a mishap investigator (single individual) or a mishap investigation team, as specified by the appointing official. A mishap investigator shall have:

- a. Knowledge of NASA mishap investigations policy, requirements and processes. Note: the NASA "Introduction to Mishap Investigation" course located on SATERN taken within the previous year satisfies this requirement; and
- b. Knowledge of witness interview techniques, data collection processes, human error analysis and root cause analysis techniques, and generation of recommendations.

**4.1.7** For investigations completed by a mishap investigator, an ex officio is not required (unless the supervisor is assigned as the investigator) (see section 4.1.8.d).

**4.1.8** A contractor mishap board, team, or investigator shall be determined by the contractor per the requirements of their contract; however, NASA can convene a NASA Investigating Authority if desired.

**4.1.9** The Appointing Official, with the assistance of the appropriate safety office, shall ensure that the investigating authority members, chair, and ex officio have the requisite clearances to investigate a mishap.

**4.1.10** The Occupational Safety and Health Division (Code 350) shall prepare a letter of appointment for the investigating authority for Type A mishaps, Type B mishaps, high-visibility mishaps and high-visibility close calls.

<b>DIRECTIVE NO.</b>	<u>GPR 8621.4</u>
<b>EFFECTIVE DATE:</b>	<u>January 9, 2012</u>
<b>EXPIRATION DATE:</b>	<u>January 9, 2017</u>

**4.1.11** The Appointing Official shall document (by memorandum or official announcement) the members of the investigating authority, its charter, and a due date for the mishap report (see Appendix F).

## **4.2 Investigation**

The purposes of the safety mishap investigation are to determine proximate and root cause(s) of the mishap or close call and to develop recommendations to prevent recurrence.

**4.2.1** Mishap investigations shall be conducted in accordance with the requirements in NPR 8621.1 and other requirements defined in the appointment letter.

- a. For Type A mishaps, Type B mishaps, and high-visibility mishaps/close calls, or other investigations delegated to the GSFC by NASA Headquarters, there may be additional instructions in the letter of delegation regarding the MIB, MIT or MI membership, activities, or other procedures to be followed.
- b. These instructions take precedence over the corresponding processes established by this directive.

**4.2.2** The appropriate safety office shall provide support to the investigating authority as follows:

- a. Arrange for administrative, logistical, and information technology support to the investigating authority as necessary. Administrative support may include but is not limited to providing meeting rooms, clerical help, photographic support, records management assistance, and laboratory analysis.

**4.2.3** The investigating authority shall be responsible for the release of the mishap site for post-investigation cleanup or activity. Upon release, facts pertaining to resuming operations (e.g., constraints, precautions, etc.) should be issued by the investigating authority. As the investigation progresses the information shall be updated as needed. In addition, the investigating authority shall be responsible for the release of impounded data, records and equipment.

**4.2.4** The investigation is not completed until the Mishap Report is approved by the Appointing Official.

## **4.3 Mishap Investigation Reports**

**4.3.1** The investigating authority shall prepare its report in accordance with the requirements of NPR 8621.1.

**4.3.2** Extensions to the report deadline should be addressed by appointing official.

**4.3.3** The mishap report shall be reviewed with 14 days by the appointing official. The appointing official shall request endorsing officials review within 30 days, if endorsements are required.

**4.3.4** The investigating authority shall take appropriate actions to disposition comments. For Type A and Type B mishaps a presentation shall be prepared by the investigating authority for briefing the appointing official and responsible organizations.

**4.3.5** If there is a minority opinion or dissenting view held by investigating authority members or the ex officio, it shall be attached to the report.

**4.3.6** The investigating authority shall present investigation findings to the appointing official in a meeting that includes the responsible organizations, appropriate safety organizations, and others previously identified.

**4.3.7** If the report is rejected, a new investigating authority shall be assigned.

**4.3.8** Approved investigation reports of Type A mishaps, Type B mishaps, and high-visibility mishaps/close calls shall be sent to the appropriate level NASA legal official, NASA import/export control official, NASA public affairs official, and any other NASA program or policy official(s) as required, for their review and reply within 10 work days.

#### **4.4 Corrective Action Plan**

The responsible organization shall receive a copy of the mishap report as part of coordination activities. The responsible organization shall prepare a Corrective Action Plan (CAP) in accordance with NPR 8621.1. The CAP shall include the recommended corrective action, the action to be implemented, and the projected completion date. The CAP is due to the appropriate safety office within 15 working days unless otherwise specified in writing. The appointing official may provide the CAP to the investigating authority, applicable safety organization, and other selected offices as is deemed appropriate for review.

**4.4.1** The appointing official shall task the responsible organization to develop, finalize, and submit a CAP and the lessons learned. If a draft CAP is included with the report, it can be used as a starting point or as guidelines for forming a CAP.

**4.4.2** A CAP shall be developed for all mishaps and close calls by the responsible organization and submitted to the appointing official within 15 calendar days of receipt of the mishap investigation report.

**4.4.3** The CAP shall address the recommendations in the mishap investigation report, including actions to correct the situation that caused the mishap or close call and prevent the same or similar mishap from reoccurring. The major objective is to address and correct the root causes for the mishap or close call.

#### **4.4.4** The CAP shall include:

- a. A description of the corrective actions necessary to eliminate the causes;
- b. Who is responsible for performing the action, or which NASA organization is responsible for ensuring the action is completed (if the action is to be performed for the responsible organization by a contractor or other NASA organization);
- c. An estimated completion date for each action provided by the performing organization; and
- d. A matrix or other means of matching corrective actions to mishap root causes or findings.

**4.4.5** If the responsible organization disagrees with the recommendation, the concern/issue should be addressed in the CAP and the appointing official will make the determination as to how to address the recommendation.

**4.4.6** If the CAP is rejected, it shall be returned with comments to the responsible organization for revision and re-submittal. The appointing official shall determine the timeframe for re-submittal of the CAP.

#### **4.4.7** If the CAP is accepted, the appointing official shall:

- a. Direct the responsible organization(s) to implement the plan;
- b. Provide the plan to the appropriate safety office for distribution. The final CAP shall be completed and filed with the official approved report. Mishap lessons learned, if identified, should be submitted to the GSFC lessons learned system. Either the responsible organization or the appropriate safety office can enter the approved corrective actions into IRIS for tracking.

### **4.5 Corrective Action Plan Implementation**

**4.5.1** Upon receipt of the CAP, organizations with assigned actions shall implement the approved CAP as directed by the appointing official.

**4.5.2** The responsible organization(s) shall implement corrective actions as soon as possible and communicate completion to the appointing official and the appropriate safety office.

**4.5.3** The status of the CAP shall be tracked monthly by the appropriate safety office.

### **4.6 Mishap Follow-Up**

- a. All investigation reports are posted in IRIS.
- b. The Occupational Safety & Health Division (Code 350) shall be the repository for all GSFC mishap investigation reports with the exception of WFF mishap investigation reports. The Wallops Safety Office (Code 803) shall be the repository for all WFF mishap investigation

reports. The record copy of the case file shall include all records of the investigation, including the signed closeout letter and report.

- c. The Appointing Official shall be responsible for ensuring resolution of issues between the Investigating Authority and the Responsible Organization.

#### **4.7 Conclusion of Mishap Activities**

**4.7.1** The appropriate safety office shall verify that the CAP is complete and all elements of the investigation have been completed and correctly recorded in IRIS.

**4.7.2** The appropriate safety office shall generate a completion statement in accordance with NPR 8621.1, Section 7.7.

## Appendix A – Definitions

- A.1 Appropriate Safety Office** - The Safety Office that has oversight responsibility for mishap/close call management. At Greenbelt it is the Occupational Safety and Health Division (Code 350) for all GSFC sites with the exception of WFF. At WFF, it is the WFF Safety Office (Code 803).
- A.2 Appointing Official** - The official authorized to appoint the investigating authority for a mishap or close call, to accept the investigation of another authority, to receive endorsements and comments from endorsing officials, and to approve the mishap report.
- A.3 Cause** - An event or condition that results in an effect. Anything that shapes or influences the outcome.
- A.4 Close Call** - An event in which there is no injury or only minor injury requiring first aid and/or no equipment/property damage or minor equipment/property damage (less than \$1,000), but which possesses a potential to cause a mishap.
- A.5 Contributing Factor** - An event or condition that may have contributed to the occurrence of an undesired outcome but, if eliminated or modified, would not by itself have prevented the occurrence.
- A.6 Corrective Action Plan (CAP)** - A plan addressing each finding of investigations with emphasis on correcting the proximate and root cause(s) of the mishap.
- A.7 CAP Closure Statement** - A final statement made by the appointing official that documents that all corrective actions have been completed and the CAP is closed.
- A.8 Corrective Actions** - Changes to design processes, work instructions, workmanship practices, training, inspections, tests, procedures, specifications, drawings, tools, equipment, facilities, resources, or material that result in preventing, minimizing, or limiting the potential for recurrence of a mishap.
- A.9 Direct Cost of Mishap or Close Call (for the purpose of mishap classification)** - The sum of the costs (the greater value of actual or fair market value) of damaged property, destroyed property, or mission failure, actual cost of repair or replacement, labor (actual value of replacement or repair hours for internal and external/contracted labor), cost of the lost commodity (e.g., the cost of the fluid that was lost from a ruptured pressure vessel), as well as resultant costs such as environmental decontamination, property cleanup, and restoration, or the estimate of these costs.
- A.10 Drug Testing Worksheet** - Worksheet to be used by official in charge to identify the individuals involved in operations for determining individuals to be drug tested.
- A.11 Endorsing Official** - The Chief/OSMA, Aircraft Management Division (AMD), CHMO, Procurement, or other official who reviews the signed mishap report and provides a signed written endorsement, comments (when applicable), and a recommendation as to whether the mishap report shall be approved or rejected.
- A.12 Ex Officio** - An individual authorized to participate in all investigation proceedings and tasked to ensure that the investigation is conducted in conformance with NASA policy and GSFC requirements.
- A.13 First Aid** - Any one-time treatment of minor scratches, cuts, burns, splinters, etc., which do not ordinarily require medical care, and any follow-up visit(s) for the purpose of observation. Such



one-time treatment, and follow-up visit(s) for the purpose of observation, is considered first aid even if provided by a physician or registered professional.

- A.14 Flight related mishaps** – all mishaps/close calls involving flight hardware or software.
- A.15 High Visibility (Mishap or Close Call)** - Those particular mishaps or close calls, regardless of the amount of property damage or personnel injury, that the Administrator, Chief/OSMA, GSFC Director, Executive Director, Office of Headquarters Operations (ED/OHO), or the Center SMA director judges to possess a high degree of programmatic impact or public, media, or political interest including, but not limited to, mishaps and close calls that impact flight hardware, flight software, or completion of critical mission milestones.
- A.16 Human Factors Mishap Investigator** - An investigator with expertise in human factors engineering and mishap causation who has the primary responsibility to assist in the collection and analysis of data, determine how human factors caused or contributed to the mishap or close call, evaluate relevant human error and determine its root cause(s), and generate recommendations that eliminate or reduce the occurrence of the error or minimize the negative effects of the error to prevent the recurrence of the mishap.
- A.17 Incident** - An occurrence of a mishap or close call.
- A.18 Incident Commander** - security individual in charge of the scene of a mishap or close call.
- A.19 Incident Reporting Information System (IRIS)** - The NASA mishap web-based system which contains mishap investigation data and provides tools to track CAPs to completion, submit status and closure data to NASA Headquarters, and perform mishap trend analyses.
- A.20 Interim Response Team (IRT)** - A team that arrives at the mishap scene immediately after an incident; secures the scene; documents the scene using photography, video, sketches, and debris mapping; identifies witnesses; collects written witness statements and contact information; preserves evidence; impounds evidence (at the scene and other NASA locations as needed); collects debris; implements the chain-of-custody process for the personal effects of the injured and deceased; notifies the NASA Public Affairs Officer about casualties, damages, and any potential hazards to the public and NASA personnel; advises the supervisor if drug testing should be initiated; and provides all information and evidence to the investigating authority. The team is considered “interim” because it operates as a short-term response team and concludes its mishap-response activities when the official NASA-appointed investigating authority arrives to the scene and takes control.
- A.21 Investigating Authority** - The individual mishap investigator, mishap investigation team, or mishap investigation board authorized to conduct an investigation for NASA. This includes the mishap investigation board chairperson, voting members, and ex officio, but not the advisors and consultants.
- A.22 Lessons Learned** - The written description of knowledge or understanding that is gained by experience, whether positive (such as a successful test or mission), or negative (such as a mishap or failure).
- A.23 Lost Workdays** - The number of days (consecutive or not) after, but not including, the day of injury or illness during which the employee would have worked but could not do so; i.e., could not perform all or any part of his/her normal assignment during all or any part of the workday or shift because of the occupational injury or illness. Includes days away, restricted duty, or transfer

to another job. Total number includes weekends and holidays occurring during the lost workday period.

- A.24 Mishap Investigation Board (MIB)** - A NASA-sponsored board that is appointed for a Type A, Type B, or high-visibility mishap or close call; requires concurrence from the Chief/OSMA and the Chief Engineer on membership; consists of an odd number of Federal employees where the majority of the members are independent from the operation or activity in which the mishap occurred; has a minimum of five voting members for Type A mishaps and three voting members for Type B mishaps. Includes a Safety Officer, Human Factors Mishap Investigator, and for all Type A mishaps involving injury, illness and fatality also includes an Occupational Health Physician (or flight surgeon for aircraft-related mishaps) as members. Is tasked to investigate a mishap or close call and generate a mishap report in accordance with NASA and GSFC requirements.
- A.25 Mishap Investigation Team (MIT)** - A NASA-sponsored team that is appointed by the Center Director for a Type C mishap, Type D mishap, or close call; consists of an odd number of Federal employees with the majority of members independent of the mishap operation; and includes a Safety Officer and human factors mishap investigator as members. Is tasked to investigate a mishap or close call and generate a mishap report in accordance with NASA and GSFC requirements.
- A.26 Mishap Investigator (MI)** - A civil servant who has expertise and experience in mishap or close call investigation; has knowledge of human error analysis and mishaps; serves as the sole investigator for a Type C mishap, Type D mishap, or close call, and generates a mishap report in accordance with NASA and GSFC requirements.
- A.27 Mishap Preparedness and Contingency Plans (MPCP)** - Pre-approved documents outlining timely organizational activities and responsibilities that must be accomplished in response to emergency, catastrophic, or potential (but not likely) events encompassing injuries, loss of life, property damage, or mission failure.
- A.28 NASA Mishap** - An unplanned event that results in at least one of the following: injury to non-NASA personnel caused by NASA operation; damage to public or private property caused by NASA operations or NASA-funded development or research projects; occupational injury or illness to NASA personnel; NASA mission failure before scheduled completion of the planned primary mission; or destruction or damage to NASA property.
- A.29 Mission Failure** - A mishap of whatever intrinsic severity that prevents the achievement of the mission's minimum success criteria or minimum mission objectives as described in the mission operations report or equivalent document.
- A.30 Observation** - A factor, event, or circumstance identified during the investigation that did not contribute to the mishap or close call but, if left uncorrected, has the potential to cause a mishap or increase the severity of a mishap; or a factor, event, or circumstance that is positive and should be noted.
- A.31 Official in Charge** - The civil service individual in charge of the operations, tasks, processes, activities, or program when the mishap occurs.
- A.32 Organizational Factor** - Any operational or management structural entity that exerts control over the system at any stage in its life cycle, including, but not limited to, the system's concept

development, design, fabrication, test, maintenance, operation, and disposal, e.g., budget, policy, management decisions.

- A.33 Proximate Cause** - The event(s) that occurred, including any condition(s) that existed immediately before the undesired outcome, directly resulted in its occurrence and, if eliminated or modified, would have prevented the undesired outcome. Also known as direct cause(s).
- A.34 Quick Incident Report** - Electronic submittal for initial mishap entry into IRIS that can be used without requiring a password.
- A.35 Responsible Organization** - The organization responsible for the activity, people, or operation/program where a mishap occurs or the lowest level of organization where corrective action shall be implemented.
- A.36 Root Cause** - One of multiple factors (events, conditions or organizational factors) that contributed to or created the proximate cause and subsequent undesired outcome and, if eliminated or modified, would have prevented the undesired outcome. Typically, multiple root causes contribute to an undesired outcome.
- A.37 Serious Workplace Hazard** - A condition, practice, method, operation, or process that has a substantial probability that death or serious physical harm could result and the employer did not know of its existence or did not exercise reasonable diligence to control the presence of the hazard.
- A.38 Witness Statement** - A verbal or written statement from a witness that describes his/her account including a description of the sequence of events, facts, conditions, and/or causes of the mishap.

## Appendix B – Acronyms

<b>AA</b>	Assistant Administrator
<b>CAP</b>	Corrective Action Plan
<b>CDR</b>	Critical Design Review
<b>COTR</b>	Contracting Officer Technical Representative
<b>CHMO</b>	Chief Health and Medical Officer
<b>ED/OHO</b>	Executive Director, Office of Headquarters Operations
<b>GPR</b>	Goddard Procedural Requirement
<b>GSFC</b>	Goddard Space Flight Center
<b>HIC</b>	Handling and Impoundment Coordinator
<b>HQ</b>	Headquarters
<b>IRIS</b>	Incident Reporting Information System
<b>IRT</b>	Interim Response Team
<b>IT</b>	Information Technology
<b>MDAA</b>	Mission Directorate Assistant Administrator
<b>MI</b>	Mishap Investigator
<b>MIB</b>	Mishap Investigation Board
<b>MIT</b>	Mishap Investigation Team
<b>MPCP</b>	Mishap Preparedness and Contingency Plan
<b>NASA</b>	National Aeronautics and Space Administration
<b>NFS</b>	NASA Far Supplement
<b>NPR</b>	NASA Procedural Requirement
<b>NRRS</b>	NASA Records Retention Schedule
<b>NSSC</b>	NASA Shared Services Center
<b>NTSB</b>	National Transportation Safety Board
<b>OHCM</b>	Office of Human Capital Management
<b>OS&amp;H</b>	Occupational Safety & Health
<b>OSHA</b>	Occupational Safety and Health Administration
<b>SARD</b>	Safety and Assurance Requirements Division
<b>SATERN</b>	System for Administration, Training, and Educational Resource for NASA
<b>SMA</b>	Safety and Mission Assurance
<b>SMSR</b>	Safety and Mission Success Review
<b>PLN</b>	Plan
<b>PSR</b>	Pre-Ship Review
<b>WBS</b>	Work Breakdown Structure
<b>WFF</b>	Wallops Flight Facility
<b>WI</b>	Work Instruction

### Appendix C – Mishap Classification Levels

<b><u>Classification Level &amp; Investigation Type</u></b>	<b><u>Property Damage</u></b>	<b><u>Injury</u></b>
<b>Type A Mishap</b>	Total direct cost of mission failure and property damage is \$2,000,000 or more,  <i>or</i> Crewed aircraft hull loss has occurred,  <i>or</i> Occurrence of an unexpected aircraft departure from controlled flight (except high performance jet/test aircraft such as F-15, F-16, F/A-18, T-38, OV-10, and T-34, when engaged in flight test activities).	Occupational injury and/or illness that resulted in:  A fatality,  <i>or</i> A permanent total disability,  <i>or</i> The hospitalization for inpatient care of 3 or more people within 30 workdays of the mishap.
<b>Type B Mishap</b>	Total direct cost of mission failure and property damage of at least \$500,000 but less than \$2,000,000.	Occupational injury and/or illness has resulted in permanent partial disability.  <i>or</i> The hospitalization for inpatient care of 1-2 people within 30 workdays of the mishap.
<b>Type C Mishap</b>	Total direct cost of mission failure and property damage of at least \$50,000 but less than \$500,000.	Nonfatal occupational injury or illness that caused any workdays away from work, restricted duty, or transfer to another job beyond the workday or shift on which it occurred.
<b>Type D Mishap</b>	Total direct cost of mission failure and property damage of at least \$1,000 but less than \$50,000.	Any nonfatal OSHA recordable occupational injury and/or illness that does not meet the definition of a Type C mishap.
<b>Close Call</b>	An event in which there is no equipment/property damage or minor equipment/property damage (less than \$1000), but which possesses a potential to cause a mishap.	An event in which there is no injury or only minor injury requiring first aid, but which possesses a potential to cause a mishap.

### Appendix D – Establishing Level of Appointing Official

The following guidelines shall be used to determine the level of the Appointing Official for investigations.

Classification	Appointing Official
Type A Mishap	HQ or GSFC Director
Type B Mishap	HQ or GSFC Director
Type C Mishap	Director of responsible organization, with concurrence of appropriate safety office
Type D Mishap	Division Chief or designee
High Visibility Mishap or Close Call	GSFC Director
Close Call	Supervisor

### Appendix E – Organization and Management Notification

Report Type	Details	Notification and Timeliness
<b>Type A Mishap</b>	<ul style="list-style-type: none"> <li>Death on or off the job - civil servant or resident contractor</li> <li>Hospitalization of 3 or more people within 30 workdays</li> <li>Permanent total disability</li> <li>Property damage or loss <math>\geq</math> \$2M</li> <li>Occurrence of an unexpected aircraft departure from controlled flight</li> <li>Crew/aircraft hull loss/ loss of flight control</li> </ul>	<ul style="list-style-type: none"> <li>GSFC Director (immediately*)</li> <li>Deputy Director (immediately)</li> <li>Director, Code 300 (immediately)</li> <li>Chief, Code 130 (immediately)</li> <li>NASA HQ OSMA (1 hour)</li> <li>Director Of organization experiencing mishap (immediately)</li> <li>OSHA Area Office (&lt;8 hours for employee death, or 3 in-patient hospitalizations within 30 days) 1-800-321-6742</li> </ul>
<b>Type B Mishap</b>	<ul style="list-style-type: none"> <li>Permanent partial disability</li> <li>Hospitalization of 1-2 people within 30 workdays</li> <li>Property damage/loss <math>\geq</math>\$500K but &lt;\$2M</li> </ul>	<ul style="list-style-type: none"> <li>GSFC Director (immediately)</li> <li>Deputy Director (immediately)</li> <li>Director, Code 300 (immediately)</li> <li>Chief, Code 130 (immediately)</li> <li>NASA HQ OSMA (1 hour)</li> <li>Director Of organization experiencing mishap (immediately)</li> <li>OSHA Area Office (&lt;8 hours for employee hospitalizations within 30 days) 1-800-321-6742</li> </ul>
<b>Type C Mishap</b>	<ul style="list-style-type: none"> <li>Lost workday</li> <li>Property damage/loss <math>\geq</math>\$50k but &lt;\$500k</li> </ul>	<p>Organizational Director Lost Workday Only: *HQ OSMA and Administrator (lost workday) within 24 hours</p>
<b>Type D Mishap</b>	<ul style="list-style-type: none"> <li>Injury requiring more than first aid</li> <li>Property damage/loss <math>\geq</math> \$1k but &lt; \$50k</li> </ul>	<p>Division Chief Director Of organization experiencing mishap (immediately)</p>
<b>High Visibility Type C &amp; D Mishaps &amp; Close Calls</b>	<ul style="list-style-type: none"> <li>Meets the criteria for the incident above and has the potential to attract media attention.</li> </ul>	<ul style="list-style-type: none"> <li>GSFC Director (immediately*)</li> <li>Deputy Director (immediately)</li> <li>Director, Code 300 (immediately)</li> <li>Chief, Code 130 (immediately)</li> <li>NASA HQ OSMA (1 hour)</li> <li>Director Of organization experiencing mishap (immediately)</li> </ul>
<b>Close Call with the potential for a mishap</b>	<ul style="list-style-type: none"> <li>Property damage &lt;\$1k</li> <li>Minor injury requiring first aid</li> <li>Event with potential to cause a mishap</li> </ul>	<ul style="list-style-type: none"> <li>Supervisor</li> </ul>



<b>DIRECTIVE NO.</b>	<u>GPR 8621.4</u>
<b>EFFECTIVE DATE:</b>	<u>January 9, 2012</u>
<b>EXPIRATION DATE:</b>	<u>January 9, 2017</u>

Page 30 of 40

The GSFC safety office shall notify the OSMA/SARD by calling 202-358-0006 or, if there is no answer, the NASA After Hours Contact GSFC at 1-866-230-6272. **For incidents occurring at WFF, Code 803, the Safety Office, is responsible for these notifications.**

In all cases, the NASA Office of the Inspector General and the Office of the Chief Counsel shall be notified if it is suspected that a mishap resulted from criminal activity. \* The immediate notifications above will take place as soon as possible after initial classification. Code 350 will work with the Public Affairs Office to make determination as to whether an incident is a high-visibility close call or mishap. Supervisors should be notified immediately of all mishaps and close calls.

## Appendix F – Example Investigating Authority Assignment Memorandum

{Insert Code of Originating Office}

TO: Distribution

FROM: {Insert Code & Title of Appointing Office (e.g. 100/Director)}

SUBJECT: Formation of a {Insert type of Investigating Authority} to Investigate the {Insert Name of Mishap/Close Call Investigating Authority}

{Insert date of mishap/close call and brief description of incident.}

In accordance with the NPR 8621.1B, I am establishing the {Insert Name of Mishap/Close Call Investigating Authority} to gather information; analyze the facts; identify the proximate cause(s), root cause(s) and contributing factors relating to the mishap; and to recommend appropriate actions to prevent a similar mishap from occurring again. The chairperson and members of the {MIB, MIT, or MI} are listed in the enclosure. The Chairperson of the {MIB, MIT, or MI} will report to me on all aspects regarding this investigation.

The {MIB, MIT, or MI} will:

- Obtain and analyze whatever evidence, facts, and opinions it considers relevant.
- Conduct tests and any other activity it deems appropriate.
- Interview witnesses and receive statements from witnesses.
- Impound property, equipment, and records as considered necessary (consistent with the agreements with international partners and contractors).
- Develop a timeline.
- Determine the proximate cause(s), root cause(s), and contributing factors relating to the mishap.
- Develop recommendations to prevent similar mishaps.
- Provide a status report every 30 days.
- Provide a draft report for review 5 days before the completion date.
- Provide a final written report that will conform to all requirements in the referenced NPR.

The Chairperson will:

- Conduct {MIB, MIT, or MI} activities in accordance with the requirements in NPR 8621.1.
- Establish and document, as necessary, rules and procedures for organizing and operating the MIB, including any subgroups, and for the format and content of oral or written reports to and by the MIB.

<b>DIRECTIVE NO.</b>	<u>GPR 8621.4</u>
<b>EFFECTIVE DATE:</b>	<u>January 9, 2012</u>
<b>EXPIRATION DATE:</b>	<u>January 9, 2017</u>

Page 32 of 40

- Designate any additional representatives, advisors, consultants, experts, liaison officers, or other individuals who may be required to support the activities of the {MIB, MIT, or MI} and define the duties and responsibilities of those persons.
- Designate another voting member of the {MIB, MIT, or MI} to act as chairperson in his or her absence.
- Document meetings and retain records.

The WBS to be used for charging hours and travel in support of this investigation is 962880.03.06.02.

The Board will begin its investigation during the week of {Insert Date}, and will provide a final report within {Insert timeframe} working days that will be on or around {Insert Date}. This investigation is to be your highest priority. Any work schedule conflicts should be brought to the attention of your supervisor for resolution.

The Board will be dismissed when it has fulfilled its requirements.

{Insert Name of Appointing Official}

Enclosure

<b>DIRECTIVE NO.</b>	<u>GPR 8621.4</u>
<b>EFFECTIVE DATE:</b>	<u>January 9, 2012</u>
<b>EXPIRATION DATE:</b>	<u>January 9, 2017</u>

Page 33 of 40

Distribution as appropriate:

Note: Contact the appropriate safety office for guidance on the distribution list. The distribution will depend on the type of investigating authority.

**DIRECTIVE NO.** GPR 8621.4  
**EFFECTIVE DATE:** January 9, 2012  
**EXPIRATION DATE:** January 9, 2017

Page 34 of 40

{Insert Investigating Authority Type} for the  
{Insert Name of Mishap/Close Call Investigating Authority}  
Date of Mishap: {Insert Date of Mishap}

The following individuals are the voting members of the {Insert Investigating Authority Type (MIB, MIT, MI)} :

Name	Organization	Responsibility on Board
		Chair
		Member (Human Factors)
		Member (Safety)

The following individual will serve as the Ex Officio on the {Insert Investigating Authority Type (MIB, MIT, MI)}, and complete applicable tasks as outlined in NPR 8621.1B.

Name	Organization	Responsibility on Board
		Ex Officio

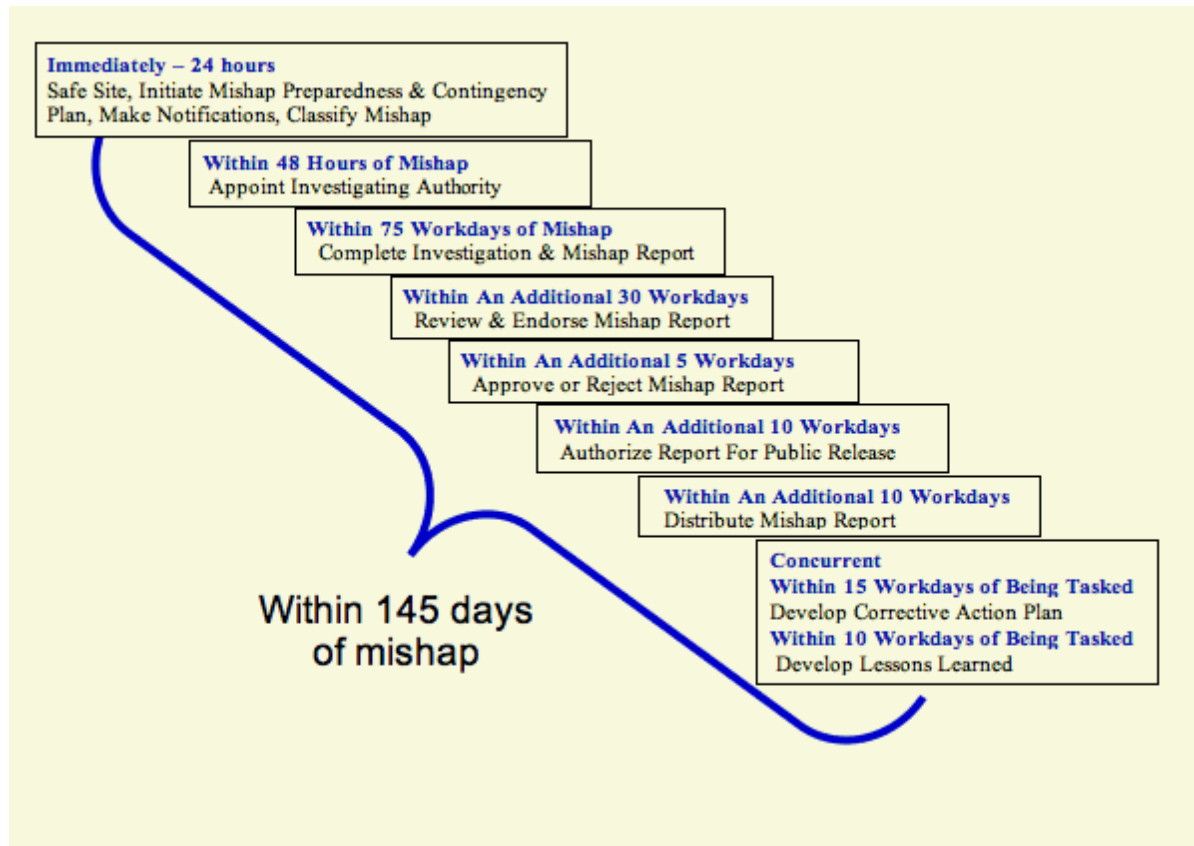
The following individuals are considered support staff to the {Insert Investigating Authority Type (MIB, MIT, MI)}

Name	Organization	Responsibility on Board
		Legal Advisor
		Public Affairs Advisor
		Medical Advisor

<b>DIRECTIVE NO.</b>	GPR 8621.4
<b>EFFECTIVE DATE:</b>	January 9, 2012
<b>EXPIRATION DATE:</b>	January 9, 2017

Page 35 of 40

## Appendix G – Mishap Investigation Notional Timeline



**DIRECTIVE NO.** GPR 8621.4  
**EFFECTIVE DATE:** January 9, 2012  
**EXPIRATION DATE:** January 9, 2017

Page 36 of 40

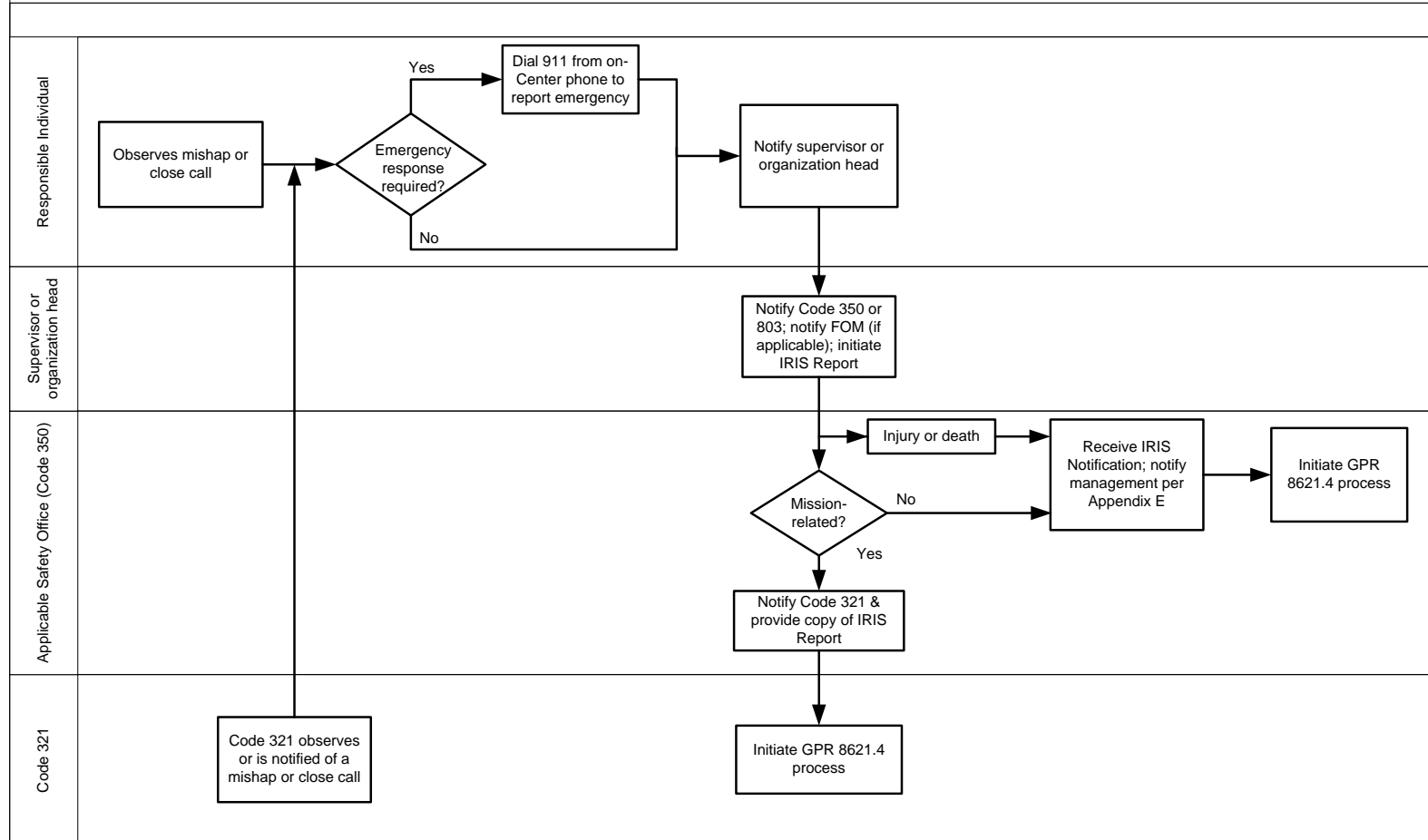
### Appendix H – HQ Notification Form

Headquarters OSMA 1-Hour Phone Report (Follow With Immediate Email)	
Mishap Type:	
Date of Mishap:	Time of Mishap:
Location of Mishap:	
Type of Injury, Illness or Fatality:	
Type of Employee Injured (Civil Service, Contractor, Grantee, Public, Other):	
If Contractor or Grantee, Name of Company or Organization:	
Type of Property Damage:	
Estimated Direct Cost of Property Damage:	
Mission Affected (If Applicable):	
Program Affected (If Applicable):	
Description of Incident:	
Actions Take to Date:	
Date of Report:	Time of Report
Author of Report:	
Author's Phone Number:	



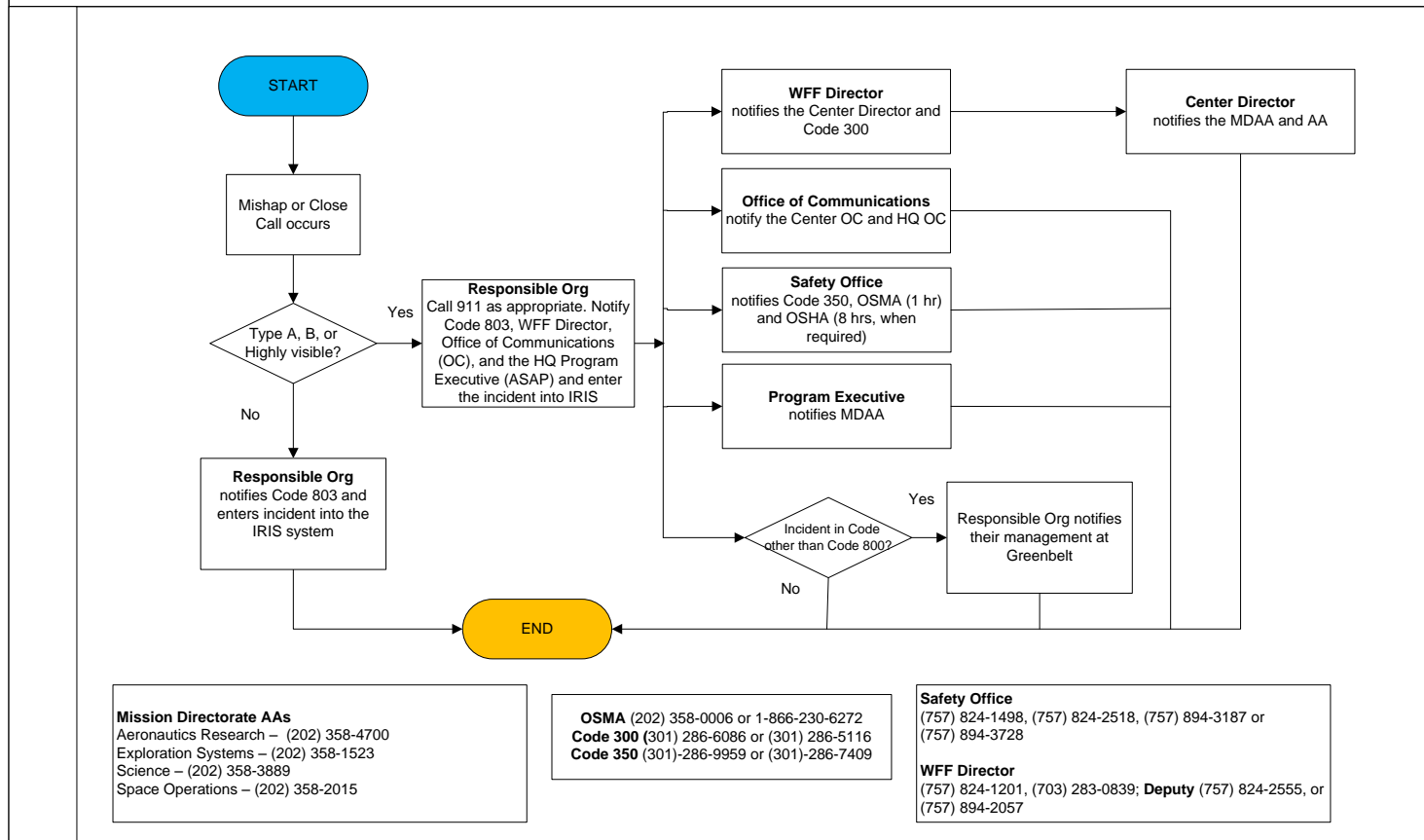
## Appendix I – Reporting of Mishaps and Close Calls

Figure 1: Reporting of Mishaps and Close Calls



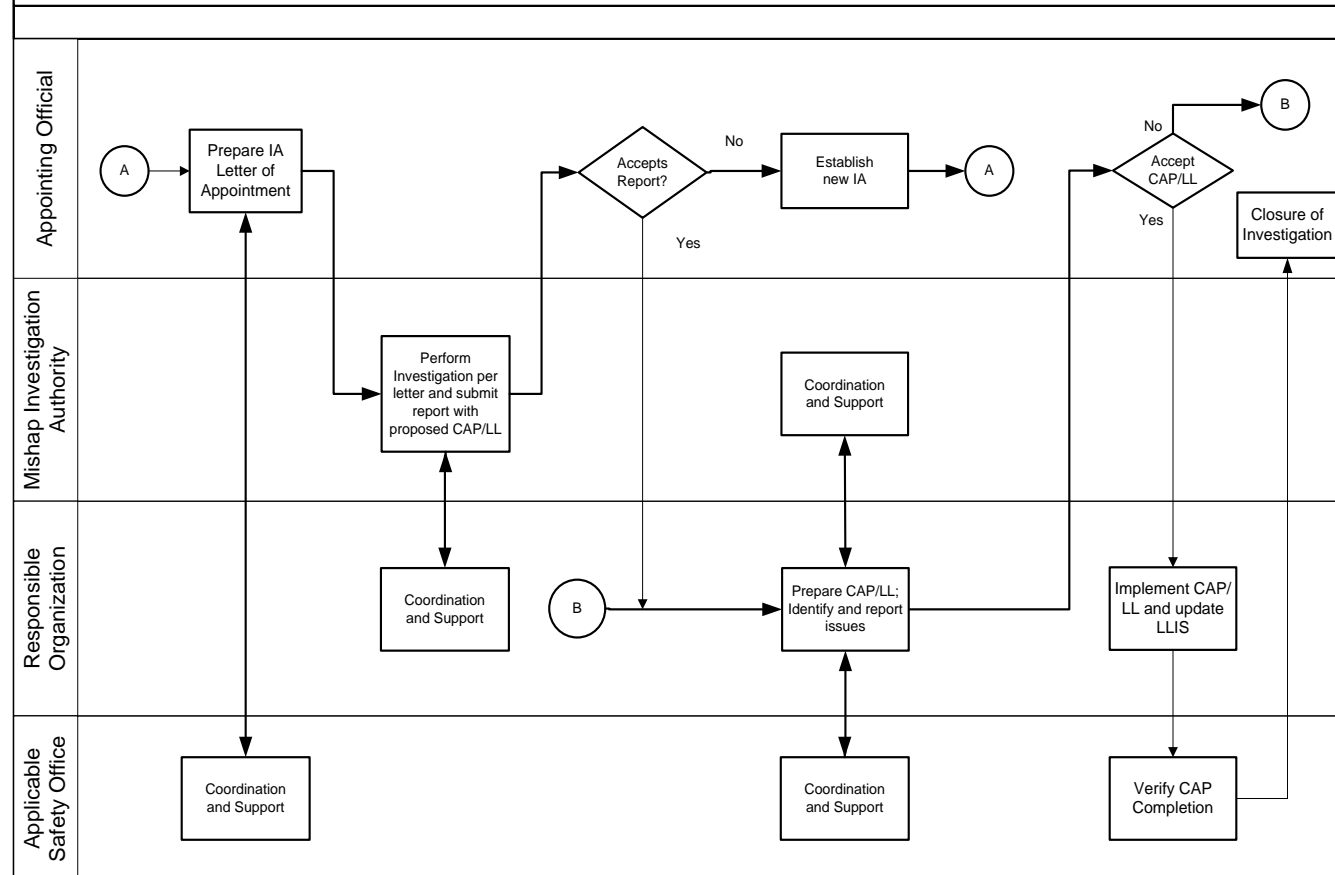
## Appendix J – Notification Process at WFF

Figure 2: Notification Process at WFF



## Appendix K – Mishap and Close Call Investigation Process

Figure 3: Mishap and Close Call Investigation Process



**DIRECTIVE NO.** GPR 8621.4  
**EFFECTIVE DATE:** January 9, 2012  
**EXPIRATION DATE:** January 9, 2017

Page 40 of 40

### CHANGE HISTORY LOG

Revision	Effective Date	Description of Changes
Baseline	1/9/2012	Initial Release

CHECK THE GSFC DIRECTIVES MANAGEMENT SYSTEM AT  
<http://gdms.gsfc.nasa.gov> TO VERIFY THAT THIS IS THE CORRECT VERSION PRIOR TO USE.